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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,440	04/19/2006	Daisuke Itoh	WAKAB81.003APC	9670
20995 7590 02/03/2011 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614				
EXAMINER ZHU, WEIPING				
ART UNIT		PAPER NUMBER		
1734				
NOTIFICATION DATE		DELIVERY MODE		
02/03/2011		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/595,440

Applicant(s)

ITO ET AL.

Examiner

WEIPING ZHU

Art Unit

1734

Period for Reply
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/29/2010, 5/12/2010 and 4/13/2010
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 20-22 and 24-40 is/are pending in the application.
- 4a) Of the above claim(s) 3-14, 16-18, 20-22, 24-28 and 30-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 15 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/29/2010
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 12, 2010 has been entered.

Status of Claims

2. Claims 1, 2, 15 and 29 are currently under examination wherein claims 1, 15 and 29 have been amended in applicant's amendment filed on April 13, 2010. Claim 35 has been withdrawn in the same amendment. The previously withdrawn claims 3, 9, 11 and 16 have also been amended in the same amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 15 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-334618 A.

With respect to claims 1, 2, 15 and 29, JP ('618 A) discloses (paragraphs [0016]-[0018]) a fine metal particle comprising gold, silver and copper in the form of a dry

powder having a preferred average particle size of 2 to 10 nm (paragraph [0022]), wherein the surface of the particle is covered with one or more compounds containing a nitrogen, an oxygen or a sulfur atom, wherein the compounds comprise alkylamines having a boiling point of less than 250 °C (paragraphs [0026]-[0028]), which would read on the compounds as claimed in the instant claims 1 and 29 or carboxylic acids capable of forming a metal salt with metal contained in the fine metal particles, wherein the carboxylic acids comprise the straight chain or the branched saturated carboxylic acids having 1-10 carbon atoms as claimed in the instant claim 15 (paragraphs [0030]-[0032]). The particle size range of the metal particle, the carbon numbers of the carboxylic acids and the boiling point of the compounds of JP ('618 A) overlap the claimed ranges respectively. Therefore, a prima facie case of obviousness exists between the prior art and these aspects of the claimed invention. See MPEP 2144.05 I.

JP ('618 A) does not specify the content range of the compounds or carboxylic acids as claimed in the instant claims 1 and 15. However, JP ('618 A) discloses that the content range of the solvent is from 5 to 100 parts based on 100 parts by mass of the fine metal particles (paragraph [0036]) and that the content of the organic solvent is determined by the content of the carboxylic acids which in turn is determined by the content of the compounds (paragraphs [0036] and [0030]) indicating that the contents of the carboxylic acids and the compounds are directly related to the content of the solvent. Therefore, the content range of the solvent of 5-100% as disclosed by JP ('618 A) would read on the claimed carboxylic acid and compound content ranges of 5 to 35%.

JP ('618 A) does not specify the boiling point of the JP ('618 A) of 100°C or lower as claimed in the instant claims 1 and 15. However, JP ('618 A) discloses that the boiling point of the polar solvent should be greater than the room temperature and lower than the sintering temperature (paragraph [0035]), which would read on the claimed temperature range. JP ('618 A) does not specify the polar solvents as claimed in the instant claims 1 and 15. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed solvents with an expectation of success because JP ('618 A) discloses the same utility for any polar solvents having a boiling point of greater than the room temperature and lower than the sintering temperature. See MPEP 2144.05 I. Furthermore, the claimed features of the polar solvents appear to be process limitations in product-by-process claims because the polar solvents would not be included in the claimed product. See the ground of rejections of the claimed treatment limitations in instant claims 1 and 15 below.

JP ('618 A) does not specify the thickness of the covering layer as claimed in the instant claims 1 and 15. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the thickness is a result effective variable, because it would directly affect the final properties of the particles as disclosed by JP ('618 A) (paragraphs [0023] and [0024]). Therefore it would have been obvious to one skilled in the art to have optimized the thickness of the covering layer on the particles of JP ('618 A) in order to achieve the desired properties of the particles. See MPEP 2144.05 II.

The claimed treatment limitations in instant claims 1 and 15 (i.e. the steps of bringing, removing, adding and evaporating) are process limitations in product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. JP ('618 A) discloses a fine metal particle, which reasonably appears to be only slightly different than the respective claimed product in the product-by-process claims. Therefore, a rejection based on section 103 of the statute is eminently fair and acceptable. See MPEP 2113.

Response to Arguments

4. The applicant's arguments filed on April 13, 2010 have been fully considered but they are not persuasive.

First, the applicant argues that JP ('618 A) by no means discloses any fine particles in the form of dry and coated powders as claimed and at the step of heat treatment of the process disclosed by JP ('618 A), the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom disclosed by JP ('618 A) is totally removed from the surface of all of the fine metal particles. In response, the examiner notes that the end product produced by the method disclosed by JP ('618 A) is a conductive metal film substitutive for various plating films for various uses in an electronic component material field (abstract), which is different from the instantly claimed fine metal particles in the form of dry and coated powders. Therefore, the non-conductive coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom on the fine metal particles of JP ('618 A) needs to be

removed. However, JP ('618 A) discloses that the surfaces of the fine metal particles in the dispersion are covered with a coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom (claim 5); and the solvent in the dispersion is evaporated by a heat treatment at a temperature lower than 250°C (abstract). It would have been obvious to one of ordinary skill in the art to evaporate the solvent in the dispersion by a heat treatment at a temperature lower than 250°C without adding the compound to detach the coating to obtain dry fine metal particles covered with the coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom as instantly claimed when such dry and coated particles are desired.

Second, the applicant argues that the carboxylic acids as disclosed by JP ('618 A) is by no means used for formation of the coating thereof on the surface of the fine metal particle and JP ('618 A) fails to suggest that C1-C10 linear or branched carboxylic acids may be used. In response, the examiner notes that JP ('618 A) discloses that carboxylic acids have a function of producing a metal salt of a carboxylic acid thereof on the surface of the fine metal particle (paragraph [0030]). JP ('618 A) does disclose that carboxylic acids comprise the straight chain or the branched saturated carboxylic acids having 1-10 carbon atoms as claimed in the instant claim 15 (paragraphs [0030]-[0032]).

Third, the applicant argues that JP ('618 A) fails to suggest how a carboxylate composed of a cation species and an anion species would form a coating layer on the surface of the fine metal particles. In response, the examiner notes that there is no such

a limitation recited in the instant claims. JP ('618 A) does not have to suggest that as asserted by the applicant.

Fourth, the applicant argues that JP ('618 A) fails to suggest whether or not any coating layer of the compound having reactivity with the group containing a nitrogen atom, an oxygen atom or a sulfur atom would be formed on the surface of the fine metal particles. In response, the examiner notes that there is no such a limitation recited in the instant claims. JP ('618 A) does not have to suggest that as asserted by the applicant. JP ('618 A)'s teaching of using a compound having reactivity with the group containing a nitrogen atom, an oxygen atom or a sulfur atom to detach the coating has not been relied upon as the ground of the rejection of the instant claims.

Fifth, the applicant argues that JP ('618 A) fails to teach the claimed alcohol solvents. In response, see the reason for the rejection of the claimed feature above.

Sixth, the applicant argues that JP ('618 A) fails to teach any available approaches for optimizing the thickness of the coating. In response, the examiner notes that the thickness of the coating is a result effective variable, because it would directly affect the final properties of the particles as disclosed by JP ('618 A) (paragraphs [0023] and [0024]). Therefore it would have been obvious to one skilled in the art to have optimized the thickness of the covering layer on the particles of JP ('618 A) in order to achieve the desired properties of the particles. See MPEP 2144.05 II. It would be up to the one of ordinary skill in the art to optimize the thickness. JP ('618 A) does not have to suggest the available approaches as asserted by the applicant.

Seventh, the applicant argues that JP ('618 A) does not disclose the content of the compound as claimed, the claimed features of specific types of the compound, specific carboxylic acids and specific choices of the thicknesses of the covering layer, and fails to provide any suggestion such that the content of the compound is directly related to the content of the solvent. The examiner respectfully disagrees with applicant's characterization of the prior art with respect to these features. In particular, note the examiner's treatment of these claimed features in the rejections supra.

Eighth, the applicant argues that JP ('618 A) fails to teach the claimed heat treatment temperature of 100°C or lower. In response, the examiner notes that the claimed feature is a process limitation in product-by-process claims. Even through product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. JP ('618 A) discloses a fine metal particle, which reasonably appears to be only slightly different than the respective claimed product in the product-by-process claims. Therefore, a rejection based on section 103 of the statute is eminently fair and acceptable. See MPEP 2113.

Conclusions

5. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emily Le can be reached on 571-272-0903. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Weiping Zhu/
Examiner, Art Unit 1734

1/28/2011